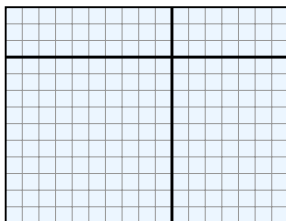


# AREA MODEL — MULTIPLICATION

Mr. Merrick · September 30, 2025

**Part A — Draw splits on the grids, label each region, and find the product.**

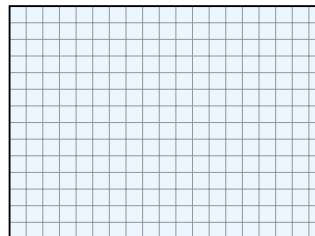
1)  $17 \times 13$



**Worked example.** Split shown:  $(10 + 7)(10 + 3)$ .

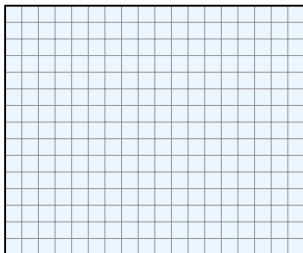
$$\begin{aligned}(17 \times 13) &= (10 + 7)(10 + 3) \\ &= 10 \times 10 + 10 \times 3 + 7 \times 10 + 7 \times 3 \\ &= 100 + 30 + 70 + 21 \\ &= \boxed{221}\end{aligned}$$

2)  $19 \times 14$



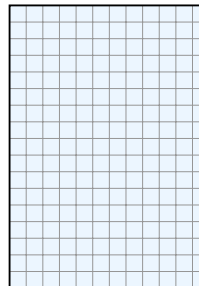
$$\begin{aligned}19 \times 14 &= (10 + 9)(10 + 4) \\ &= \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \\ &= \underline{\hspace{2cm}}\end{aligned}$$

3)  $18 \times 15$



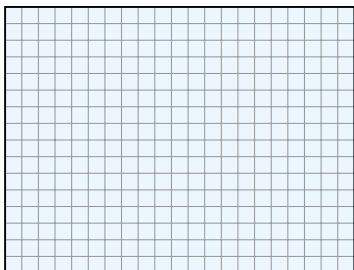
$$\begin{aligned}18 \times 15 &= (10 + 8)(10 + 5) \\ &= \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \\ &= \underline{\hspace{2cm}}\end{aligned}$$

4)  $12 \times 17$



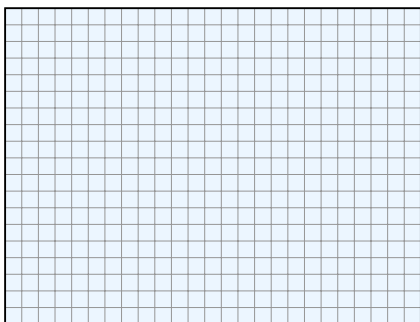
$$\begin{aligned}12 \times 17 &= (10 + 2)(10 + 7) \\ &= \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \\ &= \underline{\hspace{2cm}}\end{aligned}$$

5)  $21 \times 16$



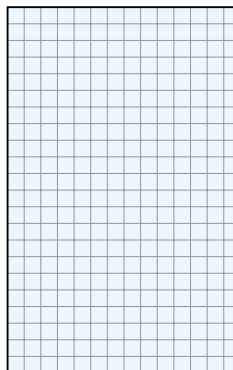
$$\begin{aligned} 21 \times 16 &= (20 + 1)(10 + 6) \\ &= \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

7)  $25 \times 19$



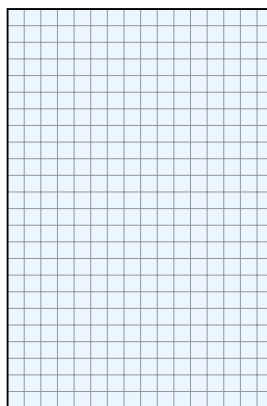
$$\begin{aligned} 25 \times 19 &= (20 + 5)(10 + 9) \\ &= \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

6)  $14 \times 22$



$$\begin{aligned} 14 \times 22 &= (10 + 4)(20 + 2) \\ &= \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

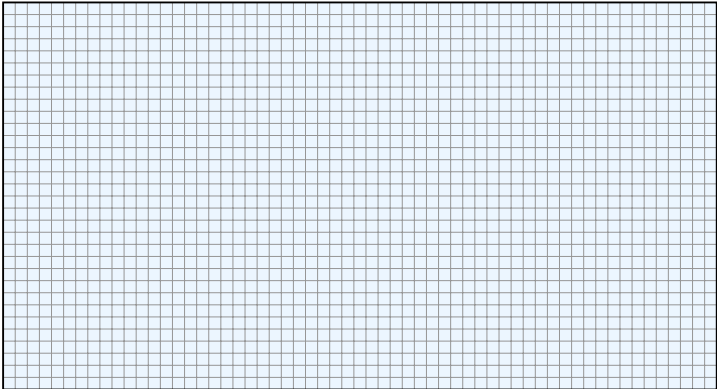
8)  $16 \times 24$



$$\begin{aligned} 16 \times 24 &= (10 + 6)(20 + 4) \\ &= \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

Part B — Use flexible “breaks”, then expand and compute.

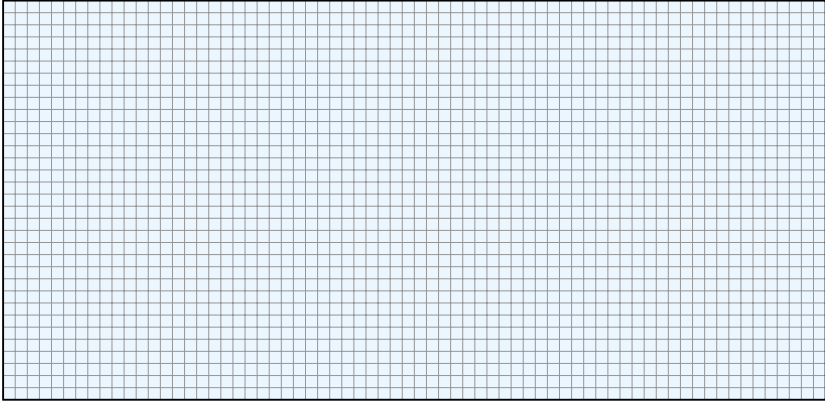
1)  $59 \times 32$



Example break:  $(50 + 9)(30 + 2)$ . Draw matching split lines.

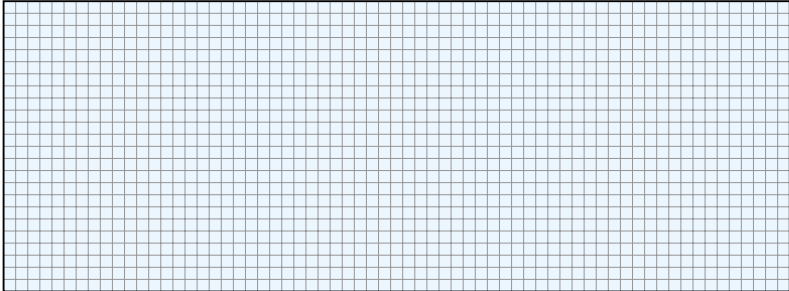
$$(50 + 9)(30 + 2) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$
$$= \underline{\hspace{1cm}}$$

3)  $68 \times 33$



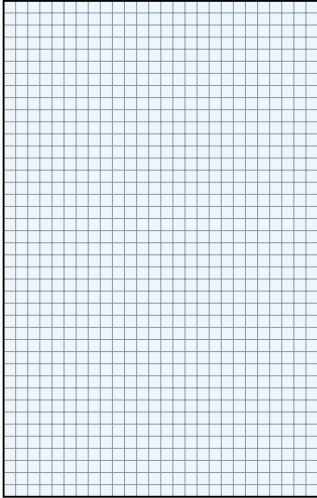
$$(60 + 8)(30 + 3) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$
$$= \underline{\hspace{1cm}}$$

2)  $65 \times 24$



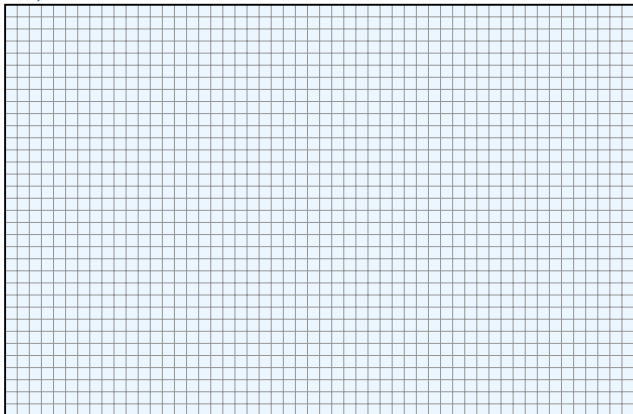
$$(30 + 35)(20 + 4) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$
$$= \underline{\hspace{1cm}}$$

4)  $26 \times 41$



$$(20 + 6)(40 + 1) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$
$$= \underline{\hspace{1cm}}$$

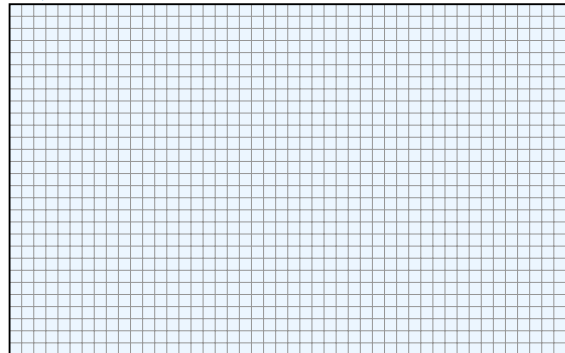
5)  $52 \times 34$



$$(50 + 2)(30 + 4) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$

$$= \underline{\hspace{1cm}}$$

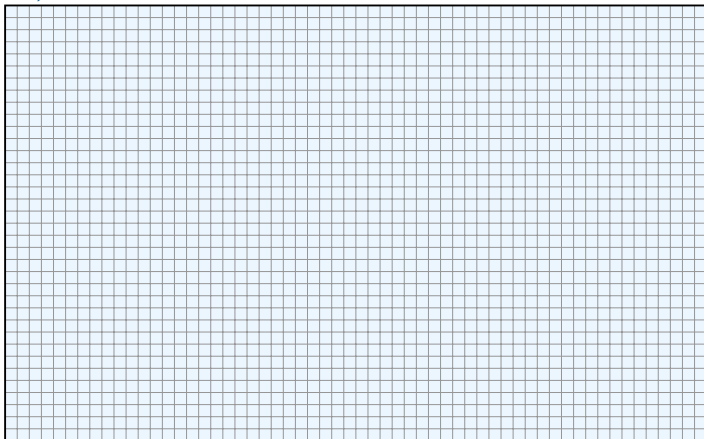
6)  $47 \times 29$



$$(40 + 7)(20 + 9) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$

$$= \underline{\hspace{1cm}}$$

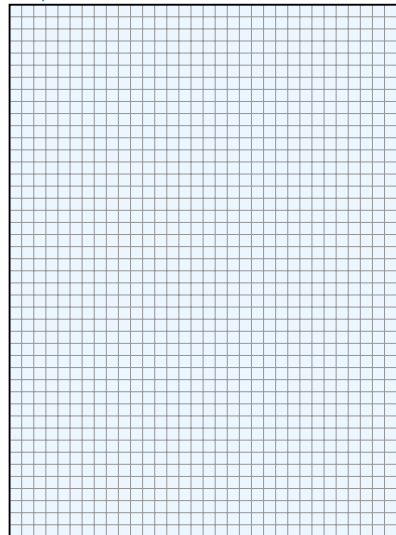
7)  $58 \times 36$



$$(50 + 8)(30 + 6) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$

$$= \underline{\hspace{1cm}}$$

8)  $33 \times 44$

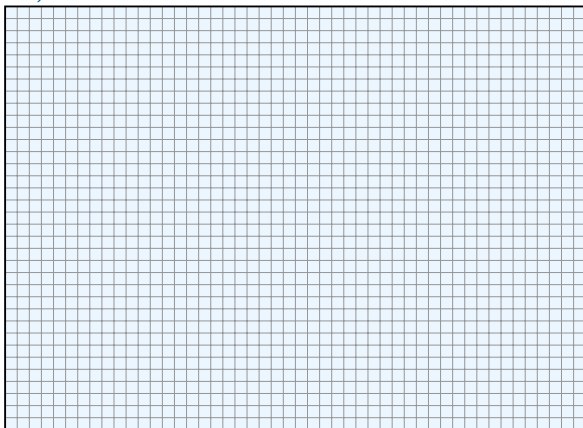


$$(30 + 3)(40 + 4) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$

$$= \underline{\hspace{1cm}}$$

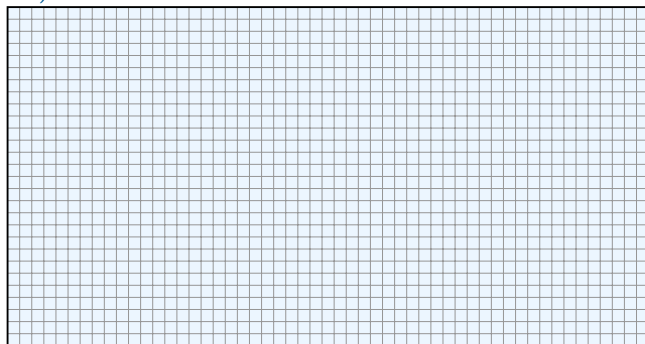
Part C — Choose your own breaks, then expand and compute.

1)  $48 \times 35$



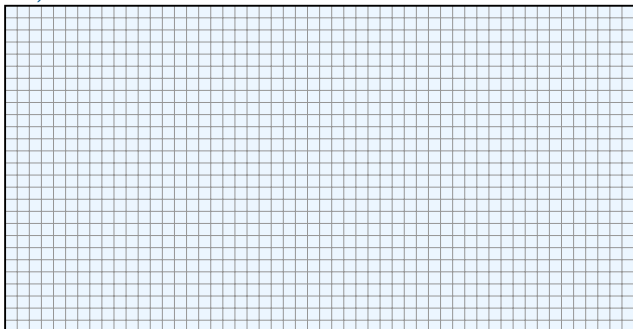
$$\begin{aligned} 48 \times 35 &= (\underline{\quad} + \underline{\quad})(\underline{\quad} + \underline{\quad}) \\ &= \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

2)  $54 \times 28$



$$\begin{aligned} 54 \times 28 &= (\underline{\quad} + \underline{\quad})(\underline{\quad} + \underline{\quad}) \\ &= \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

3)  $52 \times 27$



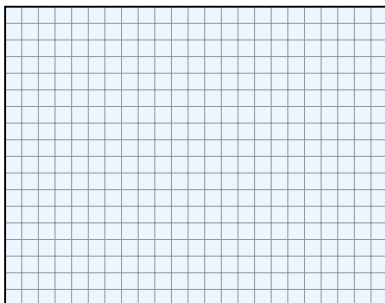
$$\begin{aligned} 52 \times 27 &= (\underline{\quad} + \underline{\quad})(\underline{\quad} + \underline{\quad}) \\ &= \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

4)  $44 \times 31$



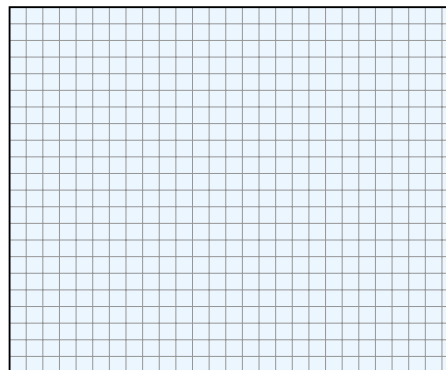
$$\begin{aligned} 44 \times 31 &= (\underline{\quad} + \underline{\quad})(\underline{\quad} + \underline{\quad}) \\ &= \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

5)  $23 \times 18$



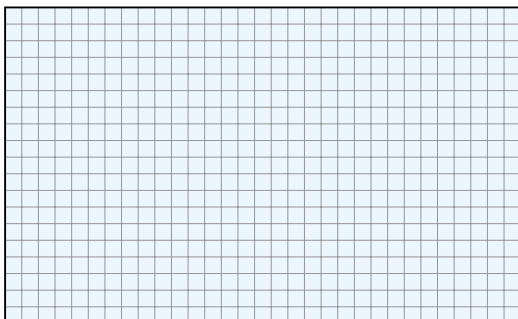
$$\begin{aligned} 23 \times 18 &= (\text{---} + \text{---}) (\text{---} + \text{---}) \\ &= \text{---} + \text{---} + \text{---} + \text{---} \\ &= \text{---} \end{aligned}$$

6)  $27 \times 22$



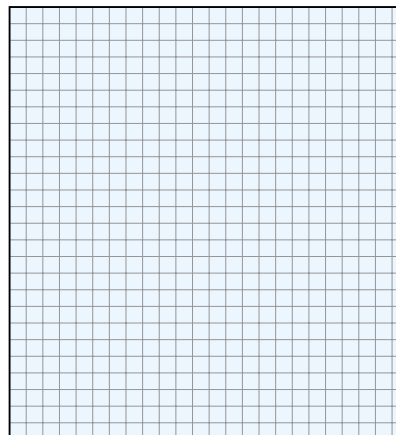
$$\begin{aligned} 27 \times 22 &= (\text{---} + \text{---}) (\text{---} + \text{---}) \\ &= \text{---} + \text{---} + \text{---} + \text{---} \\ &= \text{---} \end{aligned}$$

7)  $31 \times 19$



$$\begin{aligned} 31 \times 19 &= (\text{---} + \text{---}) (\text{---} + \text{---}) \\ &= \text{---} + \text{---} + \text{---} + \text{---} \\ &= \text{---} \end{aligned}$$

8)  $24 \times 26$



$$\begin{aligned} 24 \times 26 &= (\text{---} + \text{---}) (\text{---} + \text{---}) \\ &= \text{---} + \text{---} + \text{---} + \text{---} \\ &= \text{---} \end{aligned}$$

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**Teacher Key — Product Totals**

**Part A**

1)  $17 \times 13 = 221$

2)  $19 \times 14 = 266$

3)  $18 \times 15 = 270$

4)  $12 \times 17 = 204$

5)  $21 \times 16 = 336$

6)  $14 \times 22 = 308$

7)  $25 \times 19 = 475$

8)  $16 \times 24 = 384$

**Part C (Page 1)**

1)  $48 \times 35 = 1680$

2)  $54 \times 28 = 1512$

3)  $52 \times 27 = 1404$

4)  $44 \times 31 = 1364$

**Part B**

1)  $59 \times 32 = 1888$

2)  $65 \times 24 = 1560$

3)  $68 \times 33 = 2244$

4)  $26 \times 41 = 1066$

5)  $52 \times 34 = 1768$

6)  $47 \times 29 = 1363$

7)  $58 \times 36 = 2088$

8)  $33 \times 44 = 1452$

**Part C (Page 2)**

5)  $23 \times 18 = 414$

6)  $27 \times 22 = 594$

7)  $31 \times 19 = 589$

8)  $24 \times 26 = 624$